
Space Weather Forecast

Issued on Friday, 12 January 2024 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Ongoing likelihood of isolated Moderate flares, with a slight chance of Strong flares

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with three Moderate class flares, the largest at 11/2328 UTC from AR3539, although all flares were low level within the Moderate class range. There are currently eleven sunspot regions on the visible disc, of which seven are numbered, with a previous active region now behind the west limb but still generating one of the Moderate class flares. AR3539 has been the most active region on the disc, but is not magnetically complex or the largest region on the disc. Other moderate size groups, have all shown little overall change, as have the remaining regions on the disc which are small, weak and magnetically simple.

A filament eruption was observed in the northeast, beginning around 11/0500UTC, with an associated Coronal Mass Ejection (CME). This has been analysed as missing Earth. A CME was observed in the southwest, associated with a Moderate class flare from AR3539. This will also be assessed once updated coronagraph imagery becomes available, but is considered unlikely to be Earth directed.

Solar Wind / Geomagnetic Activity: Solar winds were predominantly at slightly elevated speeds, on average around 450m/s. The strength of the magnetic field was weak, and the important north-south component varied between being weakly north and weakly southward pointed. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is near background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate solar activity is likely to continue with further isolated Moderate class flares, and a slight chance of isolated Strong class flares.

Solar Wind / Geomagnetic Activity: There is a potential glancing CME arrival. This left the Sun on 09 Jan due to a filament eruption in the southeast disc, and gives a chance of a very slight glance tomorrow (13 Jan). Otherwise, background to slightly elevated wind speeds are expected. Quiet geomagnetic conditions are expected for much of the period, but may rise to give a spell of Unsettled with a chance of Active with any glancing CME.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to continue near background levels. However, there is a slight chance of rising to a minor radiation storm (S1) or greater, should there be any notable flare activity.

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Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	55	55	50	40
Very Active	R3 to R5 X	No	5	5	5	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)